

WHAT IS CLAIMED IS:

1. An implantable medical device for supporting bone comprising:
a support element having
a top portion,
a bottom portion having a bottom surface and one or more apertures passing therethrough;
the bottom surface of the support element includes
a receiver configured to receive a plurality of anchor assemblies; and wherein
each of the anchor assemblies includes
a means for locking the anchor assembly to the support element, wherein the means for locking includes a locking aperture;
a base having a head and a means for locking the base to the anchor assembly, such that when assembled, the head of the base for the anchor assembly does not pass through the support element.
2. The implantable medical device of claim 1, wherein the bone supported is selected from the group consisting of a spine, femur, tibia, f fibula, humerus, radius, ulna, calcaneous, and a pelvis.
3. The implantable medical device of claim 1, wherein the base is comprised of a base head;
wherein the base head is movably disposed within the anchor assembly.
4. The implantable medical device of claim 1, wherein the one or more apertures have a dimensional configuration providing access to the base and the means for locking the base to the anchor assembly through the top portion of the support element; wherein the head of the base for the anchor assembly does not pass through the support element.
5. The implantable medical device of claim 1, wherein the support element is elongate.
6. The implantable medical device of claim 1, wherein the support element has a shape selected from the group consisting of a board, plate, elongated cross-section, oval, square, I-beam and a rod.

7. The implantable medical device of claim 1, wherein the support element is sized to substantially span two or more vertebrae.

8. The implantable medical device of claim 1, wherein the support element is comprised of a material selected from the group consisting of titanium, stainless steel, carbon fiber, a biocompatible material, a reabsorbable material and composites thereof.

9. The implantable medical device of claim 8, wherein the support element is comprised of titanium.

10. The implantable medical device of claim 1, wherein the receiver is integrally disposed within the bottom surface of the bottom portion of the support element.

11. The implantable medical device of claim 1, wherein the receiver is attached to the bottom surface of the bottom portion of the support element.

12. The implantable medical device of claim 1, wherein the receiver has configuration selected from the group consisting of a slot, groove, track, dove tail and a one-way snap-in configuration.

13. The implantable medical device of claim 1, wherein the receiver has a 90-degree twist-in configuration.

14. The implantable medical device of claim 1, wherein the receiver and the anchor assembly are configured in an interconnecting geometry comprising a T-slot.

15. The implantable medical device of claim 14, wherein the T-slot configuration of the receiver comprises a planar upper face, a planar lower face and a planar medial face.

16. The implantable medical device of claim 1, wherein the receiver substantially spans the length of the bottom surface.

17. The implantable medical device of claim 1, wherein the receiver is comprised of a plurality of ends.

18. The implantable medical device of claim 17, wherein a first end of the receiver is open and a second end is closed.

19. The implantable medical device of claim 17, wherein a first and second end of the receiver are both open.

20. The implantable medical device of claim 17, wherein first and second ends of the receiver are both closed.

21. The implantable medical device of claim 1, wherein the receiver is comprised of a plurality of access ports sized for coupling the anchor assembly to the receiver distally from the receiver ends.

22. The implantable medical device of claim 1, wherein the receiver is configured to receive the anchor assemblies in two dimensions.

23. The implantable medical device of claim 1, wherein the anchor assembly has a configuration selected from the group consisting of a slot, groove, track, dove tail and a one-way snap-in configuration.

24. The implantable medical device of claim 1, wherein the anchor assembly has a 90-degree twist-in configuration.

25. The implantable medical device of claim 1, wherein the anchor assembly has a T-slot configuration.

26. The implantable medical device of claim 1, wherein the anchor assembly is comprised of a material selected from the group consisting of titanium, stainless steel, carbon fiber, a biocompatible material, a reabsorbable material and composites thereof.

27. The implantable medical device of claim 26, wherein the anchor assembly is comprised of titanium.

28. The implantable medical device of claim 15, wherein the means for locking the anchor assembly to the support element includes

a setscrew disposed within the locker aperture;

wherein the setscrew and locker aperture are threaded so as to lockably engage the receiver planar upper face upon turning; and

wherein upon so engaging the receiver planar upper face, the setscrew causes the anchor assembly to press against the receiver lower planar face to effect locking.

29. The implantable medical device of claim 15, wherein the means for locking the anchor assembly to the support element includes

a cam disposed within the locker aperture;

wherein the cam is disposed so as to lockably engage the receiver planar upper face upon turning; and

wherein upon so engaging the receiver planar upper face, the cam causes the anchor assembly to press against the receiver lower planar face to effect locking.

30. The implantable medical device of claim 15, wherein the means for locking the anchor assembly to the support element is comprised of a threaded blind aperture having a slot substantially aligned longitudinally with the receiver thereby providing expandable walls, a floor having a cut channel therethrough and a setscrew; and

wherein turning the setscrew into the blind aperture causes the walls to expand outwardly;

wherein the walls engage the receiver planar medial surface to effect locking.

31. The implantable medical device of claim 1, wherein the base is selected from the group consisting of a screw, staple, nail, hook and a pin.

32. The implantable medical device of claim 29, wherein the screw is a bone screw.

33. The implantable medical device of claim 30, wherein the bone screw is a pedicle screw.

34. The implantable medical device of claim 3, wherein the base head is selected from the group consisting of a polyaxial and a hinge-type connector.

35. The implantable medical device of claim 3, wherein the base is comprised of a means for locking the base in a desired position.

36. The implantable medical device of claim 33, wherein the means for locking the base is comprised of a threaded base aperture and a setscrew;

wherein turning the setscrew into the threaded base aperture results in engagement of the base head to effect locking.

37. The implantable medical device of claim 33, wherein the means for locking the base is comprised of a cam;

wherein the cam is disposed such that turning the cam results in engagement of the base head with the cam to effect locking.

38. A method for supporting a bony structure, the method comprising the steps of:

- 1) implanting a plurality of anchor assemblies having bases into the bone;
- 2) connectively positioning a support element having a receiver for the anchor assemblies on top of the anchor assemblies;
- 3) locking the bases within the anchor assemblies; and

4) locking the anchor assemblies within the support element receiver.

39. The method of claim 38, wherein the support element is disposed within a body location selected from the group consisting of the subcutaneous fat layer of the back, muscle, cartilage and a bone.

40. The method of claim 38, wherein the support element is disposed adjacent to bone.

41. The method of claim 38, wherein the support element is disposed adjacent to a spine.

42. The method of claim 38, wherein the support element is disposed external to the body.

43. A method for effecting a desired vertebral disk spacing including the steps of:

1) implanting a plurality of anchor assemblies having bases and a first and second locking means into vertebrae, wherein the bases of the anchor assemblies are unlocked for free movement;

2) interconnecting the anchor assemblies with the receiver of a support element, wherein the anchor assemblies are unlocked within the receiver;

3) locking the bases within the anchor assemblies using the first locking means;

4) compressing or distracting the bases in relation to each other to achieve a parallel displacement of the instrumented vertebrae; and

5) locking the anchor assemblies within the support element using the second locking means.

44. A method for effecting a desired curvature of the spine including the steps of:

1) implanting a plurality of anchor assemblies having bases and a first and second locking means into vertebrae of the spine, wherein the bases of the anchor assemblies are unlocked for free movement;

2) interconnecting the anchor assemblies with the receiver of a support element, wherein the anchor assemblies are unlocked within the receiver;

3) compressing or distracting the bases in relation to each other to affect the lordotic/kyphotic curvature of the spine;

4) locking the bases within the anchor assemblies using the first locking means; and

5) locking the anchor assemblies within the support element using the second locking means.

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